

# **Clouds and the Earth's Radiant Energy System (CERES)**

## **Data Management System**

### **Operator's Manual**

#### **Regrid Meteorological, Ozone, and Aerosol (MOA) Subsystem (Subsystem 12.0)**

**CER12.1P1**

**CER12.1P2**

**Release 5**

**Version 2**

*Thomas Caldwell, Lisa Coleman*

Science Systems and Applications Incorporated (SSAI)  
One Enterprise Parkway, Suite 200  
Hampton, VA 23666

NASA Langley Research Center  
Climate Science Branch  
Science Directorate  
21 Langley Boulevard  
Hampton, VA 23681-2199

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The Document Revision Record contains information pertaining to approved document changes. The table lists the date the Software Configuration Change Request (SCCR) was approved, the Release and Version Number, the SCCR number, a short description of the revision, and the revised sections. The document authors are listed on the cover. The Head of the CERES Data Management Team approves or disapproves the requested changes based on recommendations of the Configuration Control Board.

### Document Revision Record

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03/04/09	R5V2	705	<ul style="list-style-type: none"> <li>• Added new PGE CER12.1P2.</li> <li>• Sample ASCII (PCFin) File Listing for CER12.1P2.</li> </ul>	2.0 App. D

## **Preface**

The Clouds and the Earth's Radiant Energy System (CERES) Data Management System supports the data processing needs of the CERES Science Team research to increase understanding of the Earth's climate and radiant environment. The CERES Data Management Team works with the CERES Science Team to develop the software necessary to support the science algorithms. This software, being developed to operate at the Langley Atmospheric Sciences Data Center (ASDC), produces an extensive set of science data products.

The Data Management System consists of 12 subsystems; each subsystem represents one or more stand-alone executable programs. Each subsystem executes when all of its required input data sets are available and produces one or more archival science products.

This Operator's Manual is written for the data processing operations staff at the Langley ASDC by the Data Management Team responsible for this Subsystem. Each volume describes all Product Generation Executables for a particular subsystem and contains the Runtime Parameters, Production Request Parameters, the required inputs, the steps used to execute, and the expected outputs for each executable included within this Subsystem. In addition, all subsystem error messages and subsequent actions required by the ASDC operations staff are included.

Acknowledgment is given to the CERES Documentation Team for their support in preparing this document.

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## Introduction

The Clouds and the Earth's Radiant Energy System (CERES) is a key component of the Earth Observing System (EOS). The CERES instrument provides radiometric measurements of the Earth's atmosphere from three broadband channels: a shortwave channel (0.3 - 5  $\mu\text{m}$ ), a total channel (0.3 - 200  $\mu\text{m}$ ), and an infrared window channel (8 - 12  $\mu\text{m}$ ). The CERES instruments are improved models of the Earth Radiation Budget Experiment (ERBE) scanner instruments, which operated from 1984 through 1990 on the National Aeronautics and Space Administration's (NASA) Earth Radiation Budget Satellite (ERBS) and on the National Oceanic and Atmospheric Administration's (NOAA) operational weather satellites NOAA-9 and NOAA-10. The strategy of flying instruments on Sun-synchronous, polar orbiting satellites, such as NOAA-9 and NOAA-10, simultaneously with instruments on satellites that have precessing orbits in lower inclinations, such as ERBS, was successfully developed in ERBE to reduce time sampling errors. CERES continues that strategy by flying instruments on the polar orbiting EOS platforms simultaneously with an instrument on the Tropical Rainfall Measuring Mission (TRMM) spacecraft, which has an orbital inclination of 35 degrees. In addition, to reduce the uncertainty in data interpretation and to improve the consistency between the cloud parameters and the radiation fields, CERES includes cloud imager data and other atmospheric parameters. The CERES instruments fly on the TRMM spacecraft, on the EOS-AM platforms and on the EOS-PM platforms. The TRMM satellite carries one CERES instrument while the EOS satellites carry two CERES instruments, one operating in a fixed azimuth scanning mode and the other operating in a rotating azimuth scanning mode.

## Document Overview

This document, Regrid Meteorological, Ozone, & Aerosol (MOA) Release 3 Operator's Manual, is part of the CERES Subsystem 12.0 Release 3 delivery package provided to the Langley Atmospheric Sciences Data Center (ASDC). It provides a description of the CERES Regrid MOA Release 3 software that comprises the Product Generation Executive (PGE) CER12.1P1 and instructions for executing the software. [Appendix A](#) contains a description of acronyms and abbreviations, [Appendix B](#) contains a comprehensive list of messages that can be generated during the execution of PGEs CER12.1P1 and CER12.1P2, and [Appendix C](#) and [Appendix D](#) contain Input File Listings.

This document is organized as follows:

[Introduction](#)

[Document Overview](#)

[Subsystem Overview](#)

[1.0 PGName: CER12.1P1](#)

[2.0 PGName: CER12.1P2](#)

[Appendix A](#) - Acronyms and Abbreviations

[Appendix B](#) - Error Messages

[Appendix C](#) - Input File Listing

[Appendix D](#) - Input File Listing

## **Subsystem Overview**

### **CER12.1.P1 - Regrid MOA Subsystem**

The CERES Regrid MOA Subsystem (12.0) ingests meteorological, ozone, and aerosol data from multiple sources and combines these data into the MOA product. The primary data on the MOA are meteorological data obtained from the Global Modeling and Assimilation Office (GMAO) at Goddard Space Flight Center (GSFC). These data include vertical profiles of temperature, humidity, and wind speeds, along with surface pressure, temperature, humidity, and wind speed at 10 meters. The profile data are provided at six-hour intervals and the surface data at three-hour intervals.

The ozone profile and total column values are daily values obtained from the National Centers for Environmental Prediction (NCEP) Stratospheric Monitoring Group Ozone Blended Analysis (SMOBA) data. The aerosol optical depth data are monthly climatological data based on results from studies conducted by Dr. Larry Stowe (NOAA) and Dr. Rachel Pinker (University of Maryland). As the horizontal resolutions of the ozone and aerosol data are different from that of the meteorological data, the ozone and aerosol data are horizontally interpolated using an area-weighted averaging technique to conform with the meteorological data. There is no temporal interpolation of either the ozone or the aerosol data.

Each MOA record contains the meteorological, ozone, and aerosol data for a single region. The horizontal resolution of the input meteorological data may change with time and source, and thus the number of MOA records may change. Each horizontal grid used for storing the MOA data throughout the lifetime of the CERES project is assigned a grid index number. This value is stored in the first record of each MOA file for reference by the users.

If available, Special Sensor Microwave/Imager (SSM/I) column precipitable water data are also included on the MOA files. These data are obtained from the Global Hydrology Resource Center (GHRC) and stored on the MOA file in their native grid. Skin temperature data obtained from the GMAO files are also stored in the MOA file. Because the horizontal resolution of the SSM/I data is different from that of the GMAO resolution, these data are stored at the end of the MOA files. The SSM/I data are temporally interpolated to the hour using data from multiple satellites carrying the SSM/I imager.

### **CER12.1.P2 - Regrid MOA Subsystem**

The CERES Regrid MOA Subsystem PGE CER12.1P2 is an update of PGE 12.1P1 for Edition3 processing. This PGE uses meteorological data from GMAO on an hourly basis. GMAO data is also used for ozone data and SMOBA is no longer required.

## 1.0 PGENAME: CER12.1P1

### CER12.1P1 - CERES Regrid Meteorological, Ozone, and Aerosol (MOA) Subsystem.

## 1.1 PGE Details

### 1.1.1 Responsible Persons

Table 1-1. Subsystem Software Analysts Contacts

Item	Primary
Contact Name	Thomas Caldwell
Organization	SSAI
Address	1 Enterprise Parkway
City	Hampton
State	VA 23666
Phone	(757) 951-1621
Fax	(757) 951-1900
LaRC e-mail	Thomas.E.Caldwell@nasa.gov

### 1.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in [Table 1-1](#).

### 1.1.3 Parent PGE(s)

The Regrid MOA Subsystem is only dependent on outside data sources and has no Parent PGEs within the CERES processing system.

### 1.1.4 Target PGE(s)

Table 1-2. Target PGEs after CER12.1P1

PGENAME	Description
CER4.1-4.1P1	Cloud Property Retrieval and Convolution of Imager Cloud properties with CERES Footprint Point spread function
CER4.5-6.1P1	Inversion to Instantaneous TOA Fluxes and Surface Fluxes
CER9.1P1	Post-Processor for MOA Data, create PMOA
CER5.0P1	Instantaneous SARB Subsystem Surface Albedo Monthly Pre-Processor.
CER5.1P1	Instantaneous SARB Subsystem Main-Processor.
CER7.2.1P1	Synoptic SARB Subsystem Main-Processor.

## 1.2 Operating Environment

### 1.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 1-3. Runtime Parameters for CER12.1P1

Parameter	Description	Data Type	Valid Values
PCF	Process Control File	Ascii file name	CER12.1P1_PCFin_\$\$SS12_\$PS12out_\$CC12.yyyymmdd
yyymmdd	Data Date  yyyy = 4-digit year mm = 2-digit month dd = 2-digit day	l(8), where  year = l(4) month = l(2) day = l(2)	  > 1996 01 .. 12 01 .. 31

### 1.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

One Environment Script is required. It is named '**ENV12.1P1-env.pl**' and contains the following parameters:

- SS12 - Sampling Strategy for Regrid MOA: see Production Request
- PS12in - Production Strategy for Regrid MOA: see Production Request – Valid PS12in values: DAO-G5-CERES
- PS12out - Production Strategy for Regrid MOA: see Production Request
- CC12 - Configuration Code for Regrid MOA: see CM Database
- SW12 - SCCR version number for Regrid MOA software: see CM Database
- DATA12 - SCCR version number for Regrid MOA input data: see CM Database
- G5Stream - Variable to indicate G5 data stream:  
Valid values: 1 for reprocessing, 2 for forward processing.
- InputCheck - Variable to enable or disable PCF input checking: see CM database
- PROD - Yes if being run in production, no if being run in testing

### 1.2.3 Execution Frequency (daily, hourly,..)

This PGE is processed once per day, a maximum total of 31 days per month. Execution of this PGE for a given day will produce four six-hourly files.

### 1.2.4 Memory/Disk Space/Time Requirements

1. Execution using Primary Input Meteorological Data Source and Primary Ozone Data Source (G5-CERES and SMOBA)

Memory: 68064 KB  
 Disk Space: 740 MB  
 Total Run Time: 9:15 minutes

### 1.2.5 Restrictions Imposed in Processing Order

None. Process when Input Data are available.

## 1.3 Processor Dependencies (Previous PGEs, Ingest Data,...)

### 1.3.1 Input Dataset Name (#1): G5-CERES

Available beginning October 2008

- a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

**\$CERESHOME/sarb/data/input/regridmoa**

**Reprocessing for December 1, 1997 through January 2, 2008:**

**CERES100.prod.assim.tavg1\_2d\_slv\_Nx.yyyymmdd.hdf<sup>a</sup>,**

**CERES100.prod.assim.inst6\_3d\_ana\_Np.yyyymmdd.hdf<sup>b</sup>,**

**Forward processing for September 30, 2007 through January 2, 2012:**

**CERES200.prod.assim.tavg1\_2d\_slv\_Nx.yyyymmdd.hdf<sup>a</sup>,**

**CERES200.prod.assim.inst6\_3d\_ana\_Np.yyyymmdd.hdf<sup>b</sup>,**

where

*yyyymmdd* equals a four digit year, a two digit month and a two digit day of the PGE run.

<sup>a</sup> - see file size a in Section [1.3.1e](#)

<sup>b</sup> - see file size b in Section [1.3.1e](#)

1. Mandatory/Optional: G5-CERES is the primary meteorological input to the RegridMOA subsystem. **Information regarding G5-CERES is in Section [1.3.1](#).**
  2. Time Related Dependency:  
**The processing day (yyyymmdd) must be available.**
  3. Waiting Period: **Two weeks unless requested differently by the CERES Team.**
- b. Source of Information (Source is PGE name or Ingest Source):  
**Ingest Source: GSFC DAAC**
  - c. Alternate Data Set, if one exists (maximum waiting period):
  - d. File Disposition after successful execution: **Remove**

- e. Typical file size (MB):

**File Size    a = 288 MB**  
**b = 284 MB**

### 1.3.2 Input Dataset Name (#2): SSM/I Microwave Precipitable Water

- a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

**\$CERESHOME/sarb/data/input/regridmoa**

**f13\_iwva\_yyjp2\_dayAD.hdf, f13\_iwva\_yyjp1\_dayAD.hdf,**  
**f13\_iwva\_yyjjj\_dayAD.hdf, f13\_iwva\_yyjn1\_dayAD.hdf,**  
**f13\_iwva\_yyjn2\_dayAD.hdf**  
**f14\_iwva\_yyjp2\_dayAD.hdf, f14\_iwva\_yyjp1\_dayAD.hdf,**  
**f14\_iwva\_yyjjj\_dayAD.hdf, f14\_iwva\_yyjn1\_dayAD.hdf,**  
**f14\_iwva\_yyjn2\_dayAD.hdf**

where **yyjjj** equals a 2 digit year and a 3 digit day of year for PGE run

**yyjp1** equals a 2 digit year and a 3 digit day of year for one day prior to PGE run.

**yyjp2** equals a 2 digit year and a 3 digit day of year for two days prior to PGE run.

**yyjn1** equals a 2 digit year and a 3 digit day of year for next day after PGE run.

**yyjn2** equals a 2 digit year and a 3 digit day of year for two days after PGE run.

1. Mandatory/Optional: **Mandatory if available. While the RegridMOA Subsystem may be successfully executed without SSM/I data, if the SSM/I data are available they must be used.**
2. Time Related Dependency:  
**The processing day (yyjjj), previous two days (yyjp1, yyjp2) and next two days (yyjn1, yyjn2) must be available.**
3. Waiting Period:  
**Two weeks unless requested differently by the CERES Team. Process when one of the following groups of data sets becomes available:**  
**1.3.1,**  
**1.3.2,**  
**and 1.3.3 (1.3.3.1).**

- b. Source of Information (Source PGE name or Ingest Source):

**Ingest Source: GHRC**

- c. Alternate Data Set, if one exists (maximum waiting period): **N/A**
- d. File Disposition after successful execution: **Remove**
- e. Typical file size (MB): **2.2 MB**

### 1.3.3 Input Dataset Name (#3): Ozone

#### 1.3.3.1 SMOBA

- a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)  
**\$CERESHOME/sarb/data/input/regridmoa**  
**ozyymmdd.dat**  
**ozyymmpd.dat**  
 where *yymmdd* equals a 2 digit year, month, and day of PGE run and  
*yymmpd* equals a 2 digit year, month, and day of previous day.
  1. Mandatory/Optional: **SMOBA is the primary source for ozone data. If SMOBA ozone data are not available, G5-CERES ozone data described in Section 1.3.1 is used.**
  2. Time Related Dependency:  
**The processing day (*yymmdd*) and previous day (*yymmpd*) must be available.**
  3. Waiting Period: **When permissions are granted by the CERES Team.**
- b. Source of Information (Source PGE name or Ingest Source):  
**Ingest Source: GSFC DAAC, NCEP**
- c. Alternate Data Set, if one exists (maximum waiting period):  
**N/A**
- d. File Disposition after successful execution: **Remove**
- e. Typical file size (MB): **2.3 MB**

### 1.4 Operating Procedures (Procedure for each part of the processor's elements)

The Regrid MOA Subsystem Main-Processor production script, **runmoa.pl**, executes the software that generates the hourly MOA files for the specified run date. This script references a Process Control File (PCF) which contains the correct file names and paths for files used in the execution of the PGE. A separate PCF is required for each execution of the Subsystem. The PCF is created by executing the ASCII file generator, **ascii\_gen\_12.1P1.pl**, and the PCF generator, **pcfgen\_12.1P1.pl** prior to executing the PGE. Execution of both these file generators is accomplished by running the **setupmoa.pl** script, which requires the same command-line argument as the ASCII file generator.

#### 1.4.1 How to Execute the ASCII File and PCF Generators

The ASCII file generator requires one command-line argument, **yyyymmdd**, where *yyyymmdd* equals a four digit year, a two digit month, and a two digit day of the PGE run. Refer to [Table 1-3](#).

At the command-line (denoted by ">") type:

```
> cd $CERESHOME/sarb/CER12.1P1/rcf
> ./setupmoa.pl yyyymmdd
```

The following file will be generated in **\$CERESHOME/sarb/CER12.1P1/rcf/pcf/**:

**CER12.1P1\_PCFin\_\$\$\$12\_\$PS12out\_\$CC12.yyyymmdd**

The following PCF will be generated in **\$CERESHOME/sarb/CER12.1P1/rcf/pcf/**:

**CER12.1P1\_PCF\_\$\$\$12\_\$PS12out\_\$CC12.yyyymmdd**

### 1.4.2 How to Execute the Main Processor

The Main-Processor script, **runmoa.pl**, is executed using the newly created PCF name listed in Section 1.4.1 as the command-line argument.

At the command-line (denoted by ">") type:

```
> cd $CERESHOME/sarb/CER12.1P1/rcf/
> ./runmoa.pl CER12.1P1_PCF_$$$12_$PS12out_$CC12.yyyymmdd
```

### 1.4.3 Special Reprocessing Instructions

All output files are opened with Status = NEW in Subsystem 12.0 software. All output files listed in Section 1.6 for the reprocessing run must be removed before execution of the software. These files can be removed by executing the script, **rm\_script\_12.1P1**, using the PCF name listed in Section 1.4.2 as the command-line argument.

At the command-line (denoted by ">") type:

```
> cd $CERESHOME/sarb/CER12.1P1/rcf
> ./rm_script_12.1P1.pl CER12.1P1_PCF_$$$12_$PS12out_$CC12.yyyymmdd
```

## 1.5 Execution Evaluation

### 1.5.1 Exit Codes

The processor CER12.1P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System.

Table 1-4. Exit Codes for CER12.1P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
203	Failure	Check the Log Files and take the appropriate action (see <a href="#">Appendix B</a> ).



### 1.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, runmoa, the system message, "UX:rm: ERROR: Cannot access test: No such file or directory", may be written to the screen. This message occurs when the scripts try to remove an old output file that does not exist. This does not signify a problem.

### 1.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **\$CERESHOME/sarb/runlogs/**.

#### 1. Report Log File: **CER12.1P1\_LogReport\_\$\$SS12\_\$PS12out\_\$CC12.yyyymmdd**

The Report Log File contains Subsystem 12.0 related messages. These messages may be strictly informative (Error Type = Status or Warning) or may indicate a fatal condition that results in premature PGE termination (Error Type = Fatal). A comprehensive list of the messages that can be generated during the execution of the PGE is contained in [Appendix B](#).

#### 2. Status Log File: **CER12.1P1\_LogStatus\_\$\$SS12\_\$PS12out\_\$CC12.yyyymmdd**

The Status Log File contains all messages created by the Toolkit. If an abnormal exit is encountered by the PGE, this file should be examined for '\_F\_', the fatal message type. The responsible person should be advised.

#### 3. User Log File: **CER12.1P1\_LogUser\_\$\$SS12\_\$PS12out\_\$CC12.yyyymmdd**

The User Log File is not used at this time, but exists to satisfy the Toolkit requirements. Typically the \_U\_ and \_N\_ (User information and Notice) will be written to User Log File and Status Log File.

### 1.5.4 Solutions to Possible Problems

As mentioned in Section [1.4.3](#), all output files are opened with Status = NEW in Subsystem 12.0 software. These files must be removed before reprocessing.

### 1.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

#### a. Subsystem Termination

There are no foreseeable Subsystem terminating conditions at this time. If one day fails, continue processing the next day.

#### b. Target PGE Termination

If any of the **.met** files are missing from the expected output, this condition must terminate all further Target PGE processing.

### 1.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process once per day, producing four 6-hour data files per run. The binary output file sizes for a daily run are dependent on the meteorological input data source.

Table 1-5. Expected Output File Listing for CER12.1P1

File Name/Directory <sup>a</sup>	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination <sup>b</sup>
CER_MOA_\$SS12_\$PS12out_\$CC12.yyyymmddhh (.met) @(\$CERESHOME/sarb/data/out_comp/data/regridmoa)	m	42.0	4/day	4.1-4.1P1, 4.5-6.1P1, 9.1P1, 5.0P1, 5.1P1, 7.2.1P1 through 7.2.1P8	Archive
CER_PQCR_\$SS12_\$PS12out_\$CC12.yyyymmdd (.met) @(\$CERESHOME/sarb/data/out_comp/qa_reports/regridmoa)	m	.02	1/day	N/A	rm
CER_PCFin_\$SS12_\$PS12out_\$CC12.yyyymmdd @(\$CERESHOME/sarb/CER12.1P1/rcf/pcf)	m	.003	1/day	N/A	rm
CER_PCF_\$SS12_\$PS12out_\$CC12.yyyymmdd @(\$CERESHOME/sarb/CER12.1P1/rcf/pcf)	m	.01	1/day	N/A	rm
CER_LogReport_\$SS12_\$PS12out_\$CC12.yyyymmdd @(\$CERESHOME/sarb/runlogs)	m	.003	1/day	N/A	rm
CER_LogStatus_\$SS12_\$PS12out_\$CC12.yyyymmdd @(\$CERESHOME/sarb/runlogs)	m	.01	1/day	N/A	rm
CER_LogUser_\$SS12_\$PS12out_\$CC12.yyyymmdd @(\$CERESHOME/sarb/runlogs)	m	.001	1/day	N/A	rm

- a. See Section 1.2 for information on variable data values.  
If “(.met)” is written next to an expected Output Filename in the following table, then the metadata file **must** exist with the identical file name and .met extension.
- b. rm - remove  
m - mandatory output  
o - optional output

## 2.0 PGENAME: CER12.1P2

### CER12.1P2 - CERES Regrid Meteorological, Ozone, and Aerosol (MOA) Subsystem.

## 2.1 PGE Details

### 2.1.1 Responsible Persons

Table 2-1. Subsystem Software Analysts Contacts

Item	Primary
Contact Name	Thomas Caldwell
Organization	SSAI
Address	1 Enterprise Parkway
City	Hampton
State	VA 23666
Phone	(757) 951-1621
Fax	(757) 951-1900
LaRC e-mail	Thomas.E.Caldwell@nasa.gov

### 2.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in [Table 2-1](#).

### 2.1.3 Parent PGE(s)

The Regrid MOA Subsystem is only dependent on outside data sources and has no Parent PGEs within the CERES processing system.

### 2.1.4 Target PGE(s)

Table 2-2. Target PGEs after CER12.1P2

PGENAME	Description
CER4.1-4.1P1	Cloud Property Retrieval and Convolution of Imager Cloud properties with CERES Footprint Point spread function
CER4.5-6.1P1	Inversion to Instantaneous TOA Fluxes and Surface Fluxes
CER9.1P1	Post-Processor for MOA Data, create PMOA
CER5.0P1	Instantaneous SARB Subsystem Surface Albedo Monthly Pre-Processor.
CER5.1P1	Instantaneous SARB Subsystem Main-Processor.
CER7.2.1P1	Synoptic SARB Subsystem Main-Processor.

## 2.2 Operating Environment

### 2.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 2-3. Runtime Parameters for CER12.1P2

Parameter	Description	Data Type	Valid Values
PCF	Process Control File	Ascii file name	CER12.1P2_PCFin_\$\$SS12_\$PS12out_\$CC12.yyyymmdd
yyymmdd	Data Date  yyyy = 4-digit year mm = 2-digit month dd = 2-digit day	l(8), where  year = l(4) month = l(2) day = l(2)	  > 1996 01 .. 12 01 .. 31

### 2.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

One Environment Script is required. It is named '**ENV12.1P2-env.pl**' and contains the following parameters:

- SS12 - Sampling Strategy for Regrid MOA: see Production Request
- PS12in - Production Strategy for Regrid MOA: see Production Request – Valid PS12in values: DAO-G5-CERES
- PS12out - Production Strategy for Regrid MOA: see Production Request
- CC12 - Configuration Code for Regrid MOA: see CM Database
- SW12 - SCCR version number for Regrid MOA software: see CM Database
- DATA12 - SCCR version number for Regrid MOA input data: see CM Database
- G5Stream - Variable to indicate G5 data stream:  
Valid values: 1 for reprocessing, 2 for forward processing.
- InputCheck - Variable to enable or disable PCF input checking: see CM database
- PROD - Yes if being run in production, no if being run in testing

### 2.2.3 Execution Frequency (daily, hourly,..)

This PGE is processed once per day, a maximum total of 31 days per month. Execution of this PGE for a given day will produce four six-hourly files.

## 2.2.4 Memory/Disk Space/Time Requirements

1. Execution using Primary Input Meteorological Data Source and Primary Ozone Data Source (G5-CERES and SMOBA)

Memory: 68064 KB  
 Disk Space: 840 MB  
 Total Run Time: 13:00 minutes

## 2.2.5 Restrictions Imposed in Processing Order

None. Process when Input Data are available.

## 2.3 Processor Dependencies (Previous PGEs, Ingest Data,...)

### 2.3.1 Input Dataset Name (#1): G5-CERES

Available beginning October 2008

- a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

**\$CERESHOME/sarb/data/input/regridmoa**

**Reprocessing for December 1, 1997 through January 2, 2008:**

**CERES100.prod.assim.tavg1\_2d\_slv\_Nx.yyyymmdd.hdf<sup>a</sup>,**

**CERES100.prod.assim.inst6\_3d\_ana\_Np.yyyymmdd.hdf<sup>b</sup>,**

**Forward processing for September 30, 2007 through January 2, 2012:**

**CERES200.prod.assim.tavg1\_2d\_slv\_Nx.yyyymmdd.hdf<sup>a</sup>,**

**CERES200.prod.assim.inst6\_3d\_ana\_Np.yyyymmdd.hdf<sup>b</sup>,**

where

*yyymmdd* equals a four digit year, a two digit month and a two digit day of the PGE run.

<sup>a</sup> - see file size a in Section [2.3.1e](#)

<sup>b</sup> - see file size b in Section [2.3.1e](#)

1. Mandatory/Optional: G5-CERES is the primary meteorological input to the RegridMOA subsystem. **Information regarding G5-CERES is in Section [2.3.1](#).**
  2. Time Related Dependency:  
**The processing day (yyymmdd) must be available.**
  3. Waiting Period: **Two weeks unless requested differently by the CERES Team.**
- b. Source of Information (Source is PGE name or Ingest Source):  
**Ingest Source: GSFC DAAC**
  - c. Alternate Data Set, if one exists (maximum waiting period):
  - d. File Disposition after successful execution: **Remove**

- e. Typical file size (MB):

**File Size    a = 288 MB**

**b = 284 MB**

### 2.3.2 Input Dataset Name (#2): SSM/I Microwave Precipitable Water

- a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

**\$CERESHOME/sarb/data/input/regridmoa**

**f13\_iwva\_yyjp2\_dayAD.hdf, f13\_iwva\_yyjp1\_dayAD.hdf,**

**f13\_iwva\_yyjjj\_dayAD.hdf, f13\_iwva\_yyjn1\_dayAD.hdf,**

**f13\_iwva\_yyjn2\_dayAD.hdf**

**f14\_iwva\_yyjp2\_dayAD.hdf, f14\_iwva\_yyjp1\_dayAD.hdf,**

**f14\_iwva\_yyjjj\_dayAD.hdf, f14\_iwva\_yyjn1\_dayAD.hdf,**

**f14\_iwva\_yyjn2\_dayAD.hdf**

where **yyjjj** equals a 2 digit year and a 3 digit day of year for PGE run

**yyjp1** equals a 2 digit year and a 3 digit day of year for one day prior to PGE run.

**yyjp2** equals a 2 digit year and a 3 digit day of year for two days prior to PGE run.

**yyjn1** equals a 2 digit year and a 3 digit day of year for next day after PGE run.

**yyjn2** equals a 2 digit year and a 3 digit day of year for two days after PGE run.

1. Mandatory/Optional: **Mandatory if available. While the RegridMOA Subsystem may be successfully executed without SSM/I data, if the SSM/I data are available they must be used.**
2. Time Related Dependency:  
**The processing day (yyjjj), previous two days (yyjp1, yyjp2) and next two days (yyjn1, yyjn2) must be available.**
3. Waiting Period:  
**Two weeks unless requested differently by the CERES Team. Process when one of the following groups of data sets becomes available:**  
  
**2.3.1,**  
**2.3.2,**  
**and 2.3.3 (2.3.3.1).**

- b. Source of Information (Source PGE name or Ingest Source):

**Ingest Source: GHRC**

- c. Alternate Data Set, if one exists (maximum waiting period): **N/A**
- d. File Disposition after successful execution: **Remove**
- e. Typical file size (MB): **2.2 MB**

## 2.4 Operating Procedures (Procedure for each part of the processor's elements)

The Regrid MOA Subsystem Main-Processor production script, **runmoa.pl**, executes the software that generates the hourly MOA files for the specified run date. This script references a Process Control File (PCF) which contains the correct file names and paths for files used in the

execution of the PGE. A separate PCF is required for each execution of the Subsystem. The PCF is created by executing the ASCII file generator, **ascii\_gen\_12.1P2.pl**, and the PCF generator, **pcfgen\_12.1P2.pl** prior to executing the PGE. Execution of both these file generators is accomplished by running the **setupmoa.pl** script, which requires the same command-line argument as the ASCII file generator.

#### 2.4.1 How to Execute the ASCII File and PCF Generators

The ASCII file generator requires one command-line argument, **yyyymmdd**, where yyyymmdd equals a four digit year, a two digit month, and a two digit day of the PGE run. Refer to [Table 2-3](#).

At the command-line (denoted by ">") type:

```
> cd $CERESHOME/sarb/CER12.1P2/rcf
> ./setupmoa.pl yyyymmdd
```

The following file will be generated in **\$CERESHOME/sarb/CER12.1P2/rcf/pcf/**:

**CER12.1P2\_PCFin\_\$\$S12\_\$\$PS12out\_\$\$CC12.yyyymmdd**

The following PCF will be generated in **\$CERESHOME/sarb/CER12.1P2/rcf/pcf/**:

**CER12.1P2\_PCF\_\$\$S12\_\$\$PS12out\_\$\$CC12.yyyymmdd**

#### 2.4.2 How to Execute the Main Processor

The Main-Processor script, **runmoa.pl**, is executed using the newly created PCF name listed in [Section 2.4.1](#) as the command-line argument.

At the command-line (denoted by ">") type:

```
> cd $CERESHOME/sarb/CER12.1P2/rcf/
> ./runmoa.pl CER12.1P2_PCF_$$S12_$$PS12out_$$CC12.yyyymmdd
```

#### 2.4.3 Special Reprocessing Instructions

All output files are opened with Status = NEW in Subsystem 12.0 software. All output files listed in [Section 2.6](#) for the reprocessing run must be removed before execution of the software. These files can be removed by executing the script, **rm\_script\_12.1P2**, using the PCF name listed in [Section 2.4.2](#) as the command-line argument.

At the command-line (denoted by ">") type:

```
> cd $CERESHOME/sarb/CER12.1P2/rcf
> ./rm_script_12.1P2.pl CER12.1P2_PCF_$$S12_$$PS12out_$$CC12.yyyymmdd
```

## 2.5 Execution Evaluation

### 2.5.1 Exit Codes

The processor CER12.1P2 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System.

Table 2-4. Exit Codes for CER12.1P2

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
203	Failure	Check the Log Files and take the appropriate action (see <a href="#">Appendix B</a> ).

### 2.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, runmoa, the system message, "UX:rm: ERROR: Cannot access test: No such file or directory", may be written to the screen. This message occurs when the scripts try to remove an old output file that does not exist. This does not signify a problem.

### 2.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **\$CERESHOME/sarb/runlogs/**.

#### 1. Report Log File: CER12.1P2\_LogReport\_\$\$\$12\_\$PS12out\_\$CC12.yyyymmdd

The Report Log File contains Subsystem 12.0 related messages. These messages may be strictly informative (Error Type = Status or Warning) or may indicate a fatal condition that results in premature PGE termination (Error Type = Fatal). A comprehensive list of the messages that can be generated during the execution of the PGE is contained in [Appendix B](#).

#### 2. Status Log File: CER12.1P2\_LogStatus\_\$\$\$12\_\$PS12out\_\$CC12.yyyymmdd

The Status Log File contains all messages created by the Toolkit. If an abnormal exit is encountered by the PGE, this file should be examined for '\_F\_', the fatal message type. The responsible person should be advised.

#### 3. User Log File: CER12.1P2\_LogUser\_\$\$\$12\_\$PS12out\_\$CC12.yyyymmdd

The User Log File is not used at this time, but exists to satisfy the Toolkit requirements. Typically the \_U\_ and \_N\_ (User information and Notice) will be written to User Log File and Status Log File.

### 2.5.4 Solutions to Possible Problems

As mentioned in Section [2.4.3](#), all output files are opened with Status = NEW in Subsystem 12.0 software. These files must be removed before reprocessing.



### 2.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

#### a. Subsystem Termination

There are no foreseeable Subsystem terminating conditions at this time. If one day fails, continue processing the next day.

#### b. Target PGE Termination

If any of the **.met** files are missing from the expected output, this condition must terminate all further Target PGE processing.

## 2.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process once per day, producing four 6-hour data files per run. The binary output file sizes for a daily run are dependent on the meteorological input data source.

Table 2-5. Expected Output File Listing for CER12.1P2

File Name/Directory <sup>a</sup>	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination <sup>b</sup>
CER_MOA_\$\$SS12_\$PS12out_\$CC12.yyyymmddhh (.met) @(\$CERESHOME/sarb/data/out_comp/data/regridmoa)	m	70.0	4/day	4.1-4.1P1, 4.5-6.1P1, 9.1P1, 5.0P1, 5.1P1, 7.2.1P1 through 7.2.1P8	Archive
CER_PQCR_\$\$SS12_\$PS12out_\$CC12.yyyymmdd (.met) @(\$CERESHOME/sarb/data/out_comp/qa_reports/regridmoa)	m	.02	1/day	N/A	rm
CER_PCFin_\$\$SS12_\$PS12out_\$CC12.yyyymmdd @(\$CERESHOME/sarb/CER12.1P2/rcf/pcf)	m	.003	1/day	N/A	rm
CER_PCF_\$\$SS12_\$PS12out_\$CC12.yyyymmdd @(\$CERESHOME/sarb/CER12.1P2/rcf/pcf)	m	.01	1/day	N/A	rm
CER_LogReport_\$\$SS12_\$PS12out_\$CC12.yyyymmdd @(\$CERESHOME/sarb/runlogs)	m	.003	1/day	N/A	rm
CER_LogStatus_\$\$SS12_\$PS12out_\$CC12.yyyymmdd @(\$CERESHOME/sarb/runlogs)	m	.01	1/day	N/A	rm
CER_LogUser_\$\$SS12_\$PS12out_\$CC12.yyyymmdd @(\$CERESHOME/sarb/runlogs)	m	.001	1/day	N/A	rm

- a. See Section 2.2 for information on variable data values.  
If “(.met)” is written next to an expected Output Filename in the following table, then the metadata file **must** exist with the identical file name and .met extension.
- b. rm - remove  
m - mandatory output  
o - optional output

## References

1. Reference "Proposal for Semi-Automated Sampling Strategy, Production Strategy, and Configuration Code Implementation" internal paper for detail description of the CERES environment parameters. URL: [http://science.larc.nasa.gov/ceres/intern\\_docs/](http://science.larc.nasa.gov/ceres/intern_docs/)

## **Appendix A**

### **Acronyms and Abbreviations**

ASDC	Atmospheric Sciences Data Center
CERES	Clouds and the Earth's Radiant Energy System
DAAC	Distributed Active Archive Center
DAS	Data Assimilation System
ECMWF	European Centre for Medium-Range Weather Forecasting
EOS	Earth Observing System
EOS-AM	EOS Morning Crossing Mission
EOS-PM	EOS Afternoon Crossing Mission
EP-TOMS	Earth Probe - Total Ozone Mapping Spectrometer
ERBE	Earth Radiation Budget Experiment
ERBS	Earth Radiation Budget Satellite
GHRC	Global Hydrology Resource Center
GMAO	Global Modeling and Assimilation Office
GSFC	Goddard Space Flight Center
LaRC	Langley Research Center
LaTIS	Langley TRMM Information System
MB	Megabytes
met	metadata file
µm	microns
MOA	Meteorological, Ozone, and Aerosol
N/A	Not Applicable
NASA	National Aeronautics and Space Administration
NCEP	National Centers for Environmental Prediction
NOAA	National Oceanic and Atmospheric Administration
OMI	Ozone Monitoring Instrument
PCF	Process Control File
PGE	Product Generation Executives
QC	Quality Control
SMOBA	Stratospheric Monitoring Group Ozone Blended Analysis
SSM/I	Special Sensor Microwave / Imager
TRMM	Tropical Rainfall Measuring Mission

## Appendix B Error Messages

Appendix B contains a comprehensive list of messages that can be generated during the execution of a PGE. These messages are used to inform the operator or analyst of specific circumstances encountered during data processing. These messages may be strictly informative (Error Type = Notice or Warning), or may indicate a fatal condition that results in premature PGE termination (Error Type = Error). All messages are written to the LogReport file and/or the LogStatus File of the processing instance.

[Table B-1](#) contains a list of the PGE CER12.1P1 and CER12.1P2 diagnostic messages. Each table entry includes the message, a description of the message, and an action number.

### Operator Instructions:

If a PGE prematurely terminates, then take the following steps:

1. Look at the last few records on the LogStatus file discussed in [Section 1.5.3](#).
2. Find the error message in the Error Message listing(s), and follow the appropriate ACTION.
3. If there is no error message present in the LogStatus File, then repeat steps 1 and 2 using the LogReport File.
4. If no information is derived, then call the responsible person in [Table 1-1](#).
5. If the appropriate ACTION failed, then call the responsible person in [Table 1-1](#).
6. In all cases, log all steps that were taken after the PGE failure, and send a copy to the responsible person listed in [Table 1-1](#).

Action Codes for [Table B-1](#): (Note if an ACTION does not work, call the Responsible Person in [Table 1-1](#).)

1. Verify that file exists.
2. Verify that the file size is correct.
3. Check the PCF ascii input file and PCF file for correctness.
4. No Action, notify the Responsible Person in [Table 1-1](#).
5. No Action, message is for information only and does not affect data production.

Table B-1. Example of TK (SMF) Utility Message Table

Message / Description	Action Code
<b>Subroutine Name(): Error ... Invalid Arguments.</b> An algorithm error has occurred in sphertlib3.	4
<b>Subroutine Name(): Error ... Invalid Character Flag.</b> An invalid flag value was passed into the subroutine.	4
<b>Subroutine Name(): Error ... Invalid Date.</b> The software to determine the type of season given an integer version of the data date failed.	4
<b>Subroutine Name(): Error ... Invalid Grid Index Number.</b> Software was unable to identify existing output grid.	4
<b>Subroutine Name(): Error ... Invalid Hour Number.</b> An invalid hour value was passed into the subroutine.	4
<b>Subroutine Name(): Error ... Invalid IDIR Value.</b> An algorithm error has occurred in sphertlib3.	4
<b>Subroutine Name(): Error ... Invalid ITER Value.</b> An algorithm error has occurred in sphertlib3.	4
<b>Subroutine Name(): Error ... Invalid LIMWV Value.</b> An algorithm error has occurred in sphertlib3.	4
<b>Subroutine Name(): Error ... Invalid LIMWVX Value.</b> An algorithm error has occurred in sphertlib3.	4
<b>Subroutine Name(): Error ... Unable to close Column Aerosol file.</b> The file listed in the PCF for logic ID # 16 was not closed.	4
<b>Subroutine Name(): Error ... Unable to close Column Ozone file.</b> A file listed in the PCF for logic ID # 500 or 501 was not closed.	4
<b>Subroutine Name(): Error ... Unable to close DAO data file.</b> A file listed in the PCF for logic IDs # 101 through 133 was not closed.	4
<b>Subroutine Name(): Error ... Unable to close NGrid12 file.</b> The file listed in the PCF for logic ID # 2 was not closed.	4
<b>Subroutine Name(): Error ... Unable to close Ozone Weight file.</b> The file listed in the PCF for logic ID # 1 was not closed.	4
<b>Subroutine Name(): Error ... Unable to close RegCenters file.</b> The file listed in the PCF for logic ID # 3 was not closed.	4
<b>Subroutine Name(): Error ... Unable to close SAGE data file.</b> The file listed in the PCF for logic ID # 15 was not closed.	4
<b>Subroutine Name(): Error ... Unable to close SKIN TEMP file.</b> A file listed in the PCF for logic IDs # 300 through 304 was not closed.	4
<b>Subroutine Name(): Error ... Unable to GetParam Req_DataDay from PCF.</b> The software was unable to retrieve the data day given in the PCF for logic ID # 146.	3

Table B-1. Example of TK (SMF) Utility Message Table

Message / Description	Action Code
<b>Subroutine Name(): Error ... Unable to GetParam Req_DataMonth from PCF.</b> The software was unable to retrieve the data month given in the PCF for logic ID # 145.	3
<b>Subroutine Name(): Error ... Unable to GetParam Req_DataYear from PCF.</b> The software was unable to retrieve the data year given in the PCF for logic ID # 144.	3
<b>Subroutine Name(): Error ... Unable to open Column Aerosol file.</b> The file listed in the PCF for logic ID # 16 was not opened.	1,3
<b>Subroutine Name(): Error ... Unable to open Column Ozone file.</b> A file listed in the PCF for logic ID # 500 or 501 was not opened.	1,3
<b>Subroutine Name(): Error ... Unable to open NGrid12 file.</b> The file listed in the PCF for logic ID # 2 was not opened.	1,3
<b>Subroutine Name(): Error ... Unable to open Ozone Weight file.</b> The file listed in the PCF for logic ID # 1 was not opened.	1,3
<b>Subroutine Name(): Error ... Unable to open RegCenters file.</b> The file listed in the PCF for logic ID # 3 was not opened.	1,3
<b>Subroutine Name(): Error ... Unable to open SAGE data file.</b> The file listed in the PCF for logic ID # 15 was not opened.	1,3
<b>Subroutine Name(): Error ... Unable to open SKIN TEMP file.</b> A file listed in the PCF for logic IDs # 300 through 304 was not opened.	1,3
<b>Subroutine Name(): Error ... Unable to read Column Aerosol file.</b> The file listed in the PCF for logic ID # 16 was not read.	2
<b>Subroutine Name(): Error ... Unable to read Column Ozone file.</b> A file listed in the PCF for logic ID # 500 or 501 was not read.	2
<b>Subroutine Name(): Error ... Unable to read DAO data file.</b> A file listed in the PCF for logic IDs # 101 through 133 was not read.	2
<b>Subroutine Name(): Error ... Unable to read DAO1_grid.</b> The DAO1 Grid Namelist was not read from the NGrid12 file listed in the PCF for logic ID # 2.	2
<b>Subroutine Name(): Error ... Unable to read DAO2_grid.</b> The DAO2 Grid Namelist was not read from the NGrid12 file listed in the PCF for logic ID # 2.	2
<b>Subroutine Name(): Error ... Unable to read DAO3_grid.</b> The DAO3 Grid Namelist was not read from the NGrid12 file listed in the PCF for logic ID # 2.	2
<b>Subroutine Name(): Error ... Unable to read EPToms_Grid.</b> The EPToms Grid Namelist was not read from the NGrid12 file listed in the PCF for logic ID # 2.	2

Table B-1. Example of TK (SMF) Utility Message Table

Message / Description	Action Code
<b>Subroutine Name(): Error ... Unable to read MW_Grid.</b> The Microwave Grid Namelist was not read from the NGrid12 file listed in the PCF for logic ID # 2.	2
<b>Subroutine Name(): Error ... Unable to read Ozone Weight file.</b> The file listed in the PCF for logic ID # 1 was not read.	2
<b>Subroutine Name(): Error ... Unable to read Pinker_Grid.</b> The Pinker Grid Namelist was not read from the NGrid12 file listed in the PCF for logic ID # 2.	2
<b>Subroutine Name(): Error ... Unable to read SAGE data file.</b> The file listed in the PCF for logic ID # 15 was not read.	2
<b>Subroutine Name(): Error ... Unable to read SKIN TEMP file.</b> A file listed in the PCF for logic IDs # 300 through 304 was not read.	2
<b>Subroutine Name(): Error ... Unable to read SMOBA_Grid.</b> The Microwave Grid Namelist was not read from the NGrid12 file listed in the PCF for logic ID # 2.	2
<b>Subroutine Name(): Error ... Unable to read Stowe_Grid.</b> The Stowe Grid Namelist was not read from the NGrid12 file listed in the PCF for logic ID # 2.	2
<b>Subroutine Name(): Error ... Unable to open ECMWF data file.</b> A file listed in the PCF for logic IDs # 351 through 361 was not opened.	1,3
<b>Subroutine Name(): Error ... Unable to read ECMWF data file.</b> A file listed in the PCF for logic IDs # 351 through 361 could not be read.	2
<b>Subroutine Name(): Error ... Unable to open DAO SPHU file.</b> A file listed in the PCF for logic IDs # 110 or 130 could not be opened.	1,3
<b>Subroutine Name(): Error ... Unable to open DAO TGPU file.</b> A file listed in the PCF for logic IDs #111 or # 131 could not be opened.	1,3
<b>Subroutine Name(): Error ... Unable to setup the GRIB Interpolation.</b> ECMWF library call to setup output fields has failed.	4
<b>Subroutine Name(): Error ... Read to END of data file.</b> Data was not found in one of the files listed in the PCF for logic IDs # 351 through 361.	2,3
<b>Subroutine Name(): Error ... Unable to retrieve buffer from GRIB file.</b> ECMWF library call to read packed data has failed.	4
<b>Subroutine Name(): Error ... Unable to GRIB header information.</b> Header information from ECMWF file (logic IDs # 351 to 361) was not retrieved.	2,3
<b>Subroutine Name(): Error ... Unable to interpolate buffer data.</b> ECMWF library call to interpolate GRIB data to native Gaussian grid has failed.	4
<b>Subroutine Name(): Error ... Unable to close ECMWF data file.</b> A file listed in the PCF for logic IDs # 351 through 361 was not closed.	4

Table B-1. Example of TK (SMF) Utility Message Table

Message / Description	Action Code
<b>Subroutine Name(): Error ... Unable to read DAO2 surface data file.</b> A file listed in the PCF for logic IDs # 175 through 178 could not be read.	1,2,3
<b>Subroutine Name(): Error ... Unable to read DAO2 profile data file.</b> A file listed in the PCF for logic IDs # 175 through 178 could not be read.	1,2,3
<b>Subroutine Name(): Error ... Unable to read DAO3 surface data file.</b> A file listed in the PCF for logic IDs # 179 through 182 could not be read.	1,2,3
<b>Subroutine Name(): Error ... Unable to read DAO3 profile data file.</b> A file listed in the PCF for logic IDs # 179 through 182 could not be read.	1,2,3
<b>Subroutine Name(): Error ... Unable to get DAO2 data file identifier.</b> A filename for logic IDs # 175 through 178 could not be retrieved.	4
<b>Subroutine Name(): Error ... Unable to get DAO3 data file identifier.</b> A filename for logic IDs # 179 through 182 could not be retrieved.	4
<b>Subroutine Name(): Notice ... Invalid Latitude Number.</b> An invalid Co-Latitude value was passed into the subroutine.	5
<b>Subroutine Name(): Notice ... Successful completion of code.</b> A notice for successful completion of software with no known problems.	5
<b>Subroutine Name(): Notice ... Unable to average SSML data.</b> A notice for an algorithm problem in averaging the SSML data.	5
<b>Subroutine Name(): Notice ... Unable to Close DAO input file.</b> A file listed in the PCF for logic IDs # 101 through 133 was not closed.	4,5
<b>Subroutine Name(): Notice ... Unable to close Data file.</b> The file listed in the PCF for logic ID # 900 was not closed.	4
<b>Subroutine Name(): Notice ... Unable to close file.</b> A file listed in the PCF for logic ID # 400, 401, 500 or 501 was not closed.	5
<b>Subroutine Name(): Notice ... Unable to close MW data file.</b> A file listed in the PCF for logic IDs # 30 through 34 or logic IDs # 40 through 44 was not closed.	5
<b>Subroutine Name(): Notice ... Unable to close Primary CoLO3 data.</b> A file listed in the PCF for logic ID # 400 or 401 was not closed. This is a notice to report a failure with the Primary Ozone data set and continue using the Secondary data set listed in the PCF for logic ID # 500 and 501.	5
<b>Subroutine Name(): Notice ... Unable to Get file name from PCF.</b> A file name listed in the PCF for logic IDs # 30 through 34 or logic IDs # 40 through 44 was not retrieved.	3
<b>Subroutine Name(): Notice ... Unable to open DAO data file.</b> A file listed in the PCF for logic IDs # 101 through 133 was not opened.	1,3,5
<b>Subroutine Name(): Notice ... Unable to open Data file.</b> The file listed in the PCF for logic ID # 900 was not opened.	3



Table B-1. Example of TK (SMF) Utility Message Table

Message / Description	Action Code
<b>Subroutine Name(): Notice ... Unable to open MW data file.</b> A file listed in the PCF for logic IDs # 30 through 34 or logic IDs # 40 through 44 was not opened.	1,3
<b>Subroutine Name(): Notice ... Unable to open NVAP data file.</b> The file listed in the PCF for logic ID # 17 was not opened.	1,3
<b>Subroutine Name(): Notice ... Unable to open Primary ColO3 data.</b> A file listed in the PCF for logic ID # 400 or 401 was not opened. This is a notice to report a failure with the Primary Ozone data set and continue using the Secondary data set listed in the PCF for logic ID # 500 and 501.	1,3,5
<b>Subroutine Name(): Notice ... Unable to read MW data file.</b> A file listed in the PCF for logic IDs # 30 through 34 or logic IDs # 40 through 44 was not read.	2
<b>Subroutine Name(): Notice ... Unable to read NVAP data file.</b> The file listed in the PCF for logic ID # 17 was not read.	2
<b>Subroutine Name(): Notice ... Unable to read Primary ColO3 data.</b> A file listed in the PCF for logic ID # 400 or 401 was not read. This is a notice to report a failure with the Primary Ozone data set and continue using the Secondary data set listed in the PCF for logic ID # 500 and 501.	2
<b>Subroutine Name(): Notice ... Unable to close ECMWF data file.</b> A file listed in the PCF for logic IDs # 351 through 361 was not closed.	4
<b>Subroutine Name(): Warning ... Unable to write MOA_header.</b> The MOA Header Structure failed to write to the first record of the MOA output file listed in the PCF for logic IDs # 1000 through 1023 or 351 through 361.	4,5
<b>Subroutine Name(): Warning ... Unable to Open MOA file.</b> One of the MOA output product files could not be opened.	1,3

## Appendix C

### Sample ASCII (PCFin) File Listing for CER12.1P1

```
#####
# CERES baseline Metadata
#####
CERPGENName = CER12.1P1
SamplingStrategy = CERES
ProductInStrategy = DAO-G5-CERES
ProductOutStrategy = DAO-G5-CERES
CERDataDateYear = 1997
CERDataDateMonth = 12
CERDataDateDay = 15
ConfigurationCode = 999999
SWsccr = 123
DATAAsccr = 456

#####
# PGE specific runtime parameters
#####
Satellite_Instrument = TRMM/CERES
Ancillary_Data_Set = DAO_or_NCEP
SP_MODEL_NUM = 1
RUN_SURF_ALG = 1
PGE_VERSION = 2.0
TK_Ver = SCF TK5.2.12

#####
# PCF required directories
#####
SS12.0_InputDir.1 = /ENG/CERES/sarb/caldwell/NewStuff/sarb/data/input/regridmoa
SS12.0_InputDir.2 = /ENG/CERES/sarb/caldwell/NewStuff/sarb/ancillary/CER12.1P1
SS12.0_OutputDir.1 =
/ENG/CERES/sarb/caldwell/NewStuff/sarb/data/out_comp/data/regridmoa
SS12.0_OutputDir.2 =
/ENG/CERES/sarb/caldwell/NewStuff/sarb/data/out_comp/qa_reports/regridmoa
SS12.0_RunDir = /ENG/CERES/sarb/caldwell/NewStuff/sarb/CER12.1P1/bin
SS12.0_LogsDir = /ENG/CERES/sarb/caldwell/NewStuff/sarb/runlogs
SS12.0_MCFDir = /ENG/CERES/sarb/caldwell/NewStuff/sarb/CER12.1P1/rcf/mcf
SS12.0_SCRDir = /ENG/CERES/sarb/caldwell/NewStuff/sarb/data/scr
```

#####

# Input file names

#####

SS12.0\_Inputfile.a = Ozwts\_dec.19971205  
 SS12.0\_Inputfile.b = GridParams\_SS12.20081024  
 SS12.0\_Inputfile.c = RegCenters\_SS12.20081024  
 SS12.0\_Inputfile.d = SAGE\_WV\_win.19971205  
 SS12.0\_Inputfile.e = Pink\_Stow\_12.19971205  
 SS12.0\_Inputfile.f = ozone\_clim.dat  
 SS12.0\_Inputfile.1x = CERES000.prod.assim.const\_2d\_asm\_Nx.000000000.hdf  
 SS12.0\_Inputfile.1y = CERES100.prod.assim.tavg1\_2d\_slv\_Nx.19971215.hdf  
 SS12.0\_Inputfile.1z = CERES100.prod.assim.inst6\_3d\_ana\_Np.19971215.hdf  
 SS12.0\_Inputfile.3a = f13\_iwva\_97347\_dayAD.hdf  
 SS12.0\_Inputfile.3b = f13\_iwva\_97348\_dayAD.hdf  
 SS12.0\_Inputfile.3c = f13\_iwva\_97349\_dayAD.hdf  
 SS12.0\_Inputfile.3d = f13\_iwva\_97350\_dayAD.hdf  
 SS12.0\_Inputfile.3e = f13\_iwva\_97351\_dayAD.hdf  
 SS12.0\_Inputfile.3f = f14\_iwva\_97347\_dayAD.hdf  
 SS12.0\_Inputfile.3g = f14\_iwva\_97348\_dayAD.hdf  
 SS12.0\_Inputfile.3h = f14\_iwva\_97349\_dayAD.hdf  
 SS12.0\_Inputfile.3i = f14\_iwva\_97350\_dayAD.hdf  
 SS12.0\_Inputfile.3j = f14\_iwva\_97351\_dayAD.hdf  
 SS12.0\_Inputfile.4a = oz971214.dat  
 SS12.0\_Inputfile.4b = oz971215.dat  
 SS12.0\_Inputfile.5a = L3\_ozone\_omi\_19971214.txt  
 SS12.0\_Inputfile.5b = L3\_ozone\_omi\_19971215.txt  
 SS12.0\_Inputfile.8a = CPMOA\_AA.mcf  
 SS12.0\_Inputfile.8b = CPQCR\_AA.mcf

#####

# Output file names

#####

SS12.0\_Outputfile.1a = CER\_MOA\_CERES\_DAO-G5-CERES\_999999.1997121500  
 SS12.0\_Outputfile.1g = CER\_MOA\_CERES\_DAO-G5-CERES\_999999.1997121506  
 SS12.0\_Outputfile.1m = CER\_MOA\_CERES\_DAO-G5-CERES\_999999.1997121512  
 SS12.0\_Outputfile.1s = CER\_MOA\_CERES\_DAO-G5-CERES\_999999.1997121518  
 SS12.0\_Outputfile.2 = CER\_PQCR\_CERES\_DAO-G5-CERES\_999999.19971215

#####

# Log file names

#####

SS12.0\_Logsfile.1 = CER12.1P1\_LogStatus\_CERES\_DAO-G5-CERES\_999999.19971215  
 SS12.0\_Logsfile.2 = CER12.1P1\_LogReport\_CERES\_DAO-G5-CERES\_999999.19971215  
 SS12.0\_Logsfile.3 = CER12.1P1\_LogUser\_CERES\_DAO-G5-CERES\_999999.19971215

## Appendix D

### Sample ASCII (PCFin) File Listing for CER12.1P2

```
#####
# CERES baseline Metadata
#####
CERPGEName = CER12.1P2
SamplingStrategy = CERES
ProductInStrategy = GMAO-G5-CERES
ProductOutStrategy = SSIT-GMAO-G5-Edition3
CERDataDateYear = 1997
CERDataDateMonth = 12
CERDataDateDay = 15
ConfigurationCode = 999999
SWsccr = 123
DATAAsccr = 456

#####
# PGE specific runtime parameters
#####
Satellite_Instrument = TRMM/CERES
Ancillary_Data_Set = DAO_or_NCEP
SP_MODEL_NUM = 1
RUN_SURF_ALG = 1
PGE_VERSION = 2.0
TK_Ver = SCF TK5.2.15

#####
# PCF required directories
#####
SS12.0_InputDir.1 = /ENG/CERES/sarb/caldwell/sarb/data/input/regridmoa
SS12.0_InputDir.2 = /ENG/CERES/sarb/caldwell/sarb/ancillary/CER12.1P1
SS12.0_OutputDir.1 = /ENG/CERES/sarb/caldwell/sarb/data/out_comp/data/ regridmoa
SS12.0_OutputDir.2 = /ENG/CERES/sarb/caldwell/sarb/data/out_comp/qa_reports/ regridmoa
SS12.0_RunDir = /ENG/CERES/sarb/caldwell/sarb/CER12.1P2/bin
SS12.0_LogsDir = /ENG/CERES/sarb/caldwell/sarb/runlogs
SS12.0_MCFDir = /ENG/CERES/sarb/caldwell/sarb/CER12.1P2/rcf/mcf
SS12.0_SCRDir = /ENG/CERES/sarb/caldwell/sarb/data/scr

#####
# Input file names
#####
SS12.0_Inputfile.a = Ozwts_dec.19971205
SS12.0_Inputfile.b = GridParams_SS12.20081024
SS12.0_Inputfile.c = RegCenters_SS12.20081024
```

SS12.0\_Inputfile.d = SAGE\_WV\_win.19971205  
 SS12.0\_Inputfile.e = Pink\_Stow\_12.19971205  
 SS12.0\_Inputfile.f = ozone\_clim.dat  
 SS12.0\_Inputfile.1x = CERES000.prod.assim.const\_2d\_asm\_Nx.000000000.hdf  
 SS12.0\_Inputfile.1y = CERES100.prod.assim.tavg1\_2d\_slv\_Nx.19971215.hdf  
 SS12.0\_Inputfile.1z = CERES100.prod.assim.inst6\_3d\_ana\_Np.19971215.hdf  
 SS12.0\_Inputfile.3a = f13\_iwva\_97347\_dayAD.hdf  
 SS12.0\_Inputfile.3b = f13\_iwva\_97348\_dayAD.hdf  
 SS12.0\_Inputfile.3c = f13\_iwva\_97349\_dayAD.hdf  
 SS12.0\_Inputfile.3d = f13\_iwva\_97350\_dayAD.hdf  
 SS12.0\_Inputfile.3e = f13\_iwva\_97351\_dayAD.hdf  
 SS12.0\_Inputfile.3f = f14\_iwva\_97347\_dayAD.hdf  
 SS12.0\_Inputfile.3g = f14\_iwva\_97348\_dayAD.hdf  
 SS12.0\_Inputfile.3h = f14\_iwva\_97349\_dayAD.hdf  
 SS12.0\_Inputfile.3i = f14\_iwva\_97350\_dayAD.hdf  
 SS12.0\_Inputfile.3j = f14\_iwva\_97351\_dayAD.hdf  
 SS12.0\_Inputfile.8a = CPMOA\_AA.mcf  
 SS12.0\_Inputfile.8b = CPQCR\_AA.mcf

#####

# Output file names

#####

SS12.0\_Outputfile.1a = CER\_MOA\_CERES\_SSIT-GMAO-G5-Edition3\_999999.1997121500  
 SS12.0\_Outputfile.1g = CER\_MOA\_CERES\_SSIT-GMAO-G5-Edition3\_999999.1997121506  
 SS12.0\_Outputfile.1m = CER\_MOA\_CERES\_SSIT-GMAO-G5-Edition3\_999999.1997121512  
 SS12.0\_Outputfile.1s = CER\_MOA\_CERES\_SSIT-GMAO-G5-Edition3\_999999.1997121518  
 SS12.0\_Outputfile.2 = CER\_PQCR\_CERES\_SSIT-GMAO-G5-Edition3\_999999.19971215

#####

# Log file names

#####

SS12.0\_Logsfile.1 = CER12.1P2\_LogStatus\_CERES\_SSIT-GMAO-G5-Edition3\_999999.19971215  
 SS12.0\_Logsfile.2 = CER12.1P2\_LogReport\_CERES\_SSIT-GMAO-G5-Edition3\_999999.19971215  
 SS12.0\_Logsfile.3 = CER12.1P2\_LogUser\_CERES\_SSIT-GMAO-G5-Edition3\_999999.19971215